
Audit of the Postsecondary
Education Participants System
Development

FINAL AUDIT REPORT



Audit Control Number 11-70002
February 1999

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U.S. Department of Education
Office of Inspector General
Washington, DC

NOTICE

Statements that management practices need improvement, as well as other conclusions and recommendations in this report, represent the opinions of the Office of Inspector General. Determination of corrective action to be taken will be made by appropriate Department of Education officials. This report may be released to members of the press and general public under the Freedom of Information Act.

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EXECUTIVE SUMMARY

We have performed an audit of the Department's Postsecondary Education Participants System (PEPS). PEPS is a mission critical system designed to assist the Office of Student Financial Assistance Programs (OSFAP) in meeting its responsibility to manage and monitor all organizations that participate in the delivery of the Federal student financial assistance programs. Responsibility for the development of PEPS is shared between components in OSFAP, the Office of the Chief Financial Officer (OCFO) and the Office of the Chief Information Officer (OCIO).

The objective of our audit was to assess the Department's management of the system development process. Generally, we found that PEPS featured many quality project development attributes, but encountered delays due to weaknesses in the Department's capital planning and investment control process, and suffered from inadequate attention to data integrity during its early years. Despite the delays and the data concerns, system users have generally expressed the opinion that the PEPS system will serve the Department well when it is fully implemented.

PEPS Featured Many Quality Project Development Attributes

Many attributes common to successful Information Technology (IT) project management have been evident with PEPS. Throughout the system development process the PEPS development team demonstrated stable leadership and a strong commitment to the project goals. PEPS was also one of the first ED contracts to employ a modular approach to systems development. ED's development of PEPS further exemplified successful IT project management through extensive user input at various stages of the development process. Recent PEPS development efforts have also featured data input at the point of origination in an effort to enhance data integrity.

Despite the many positive attributes of the PEPS development process, there are three areas where ED's processes could be improved. These areas are described in the section below.

ED Needs to Accelerate Its Implementation of the Capital Planning Provisions of the Clinger-Cohen Act

There have been several delays in the development of PEPS since its inception in May 1992. In our opinion, many of the conditions that caused the delays were outside the control of the development team, but would have been manageable through a departmental capital planning and investment control process. The protracted PEPS development process resulted in additional expense through the need for workaround routines and extension of Institutional Data System (IDS) operations into July 1998. During the interim, ED managers lacked easily retrievable information for the Federal Student Financial Assistance (SFA) program management. Although most planned PEPS

functionality is now in place, the current goal of completion in FY 99 is at risk due to under funding. Accelerated implementation of the capital planning provisions of the Clinger-Cohen Act would, in our opinion, help ED to avoid the recurrence of many of the problems which led to delays with PEPS development, and would strengthen future ED IT development projects.

ED Should Take Steps to Assure the Quality and Completeness of PEPS Data

Early utilization of the PEPS system was hampered by incomplete and, in some instances, problematic data. ED management has primarily attributed the PEPS data quality concerns to the transfer of unreliable data from IDS, PEPS' predecessor system, and to poor data entry practices during the systems' early years. Recognizing this limitation, ED has initiated several efforts to improve the quality of the PEPS data during the past several years. However, to date a thorough independent data reliability assessment has not been performed. For the Department to obtain the full benefit from the PEPS system, it should take steps to assure the system's user community of the quality and reliability of the PEPS data.

Controls Over IT Contracting Need to be Strengthened to Address System Transition

Project management reported that the PEPS development contract with the original contractor did not include a provision for the transfer of critical system documentation and source code to the subsequent contractor. This oversight resulted in a significant delay in PEPS development during 1995 and 1996 and additional cost to the development effort. ED was eventually able to provide the subsequent contractor with the necessary documentation to resume project development, but lacks specific guidance to prevent recurrence of transition problems with future development efforts.

Recommendations

We recommend that the Chief Financial Officer and the Acting Chief Information Officer:

1. accelerate the implementation of the capital planning and investment control provisions of the Clinger-Cohen Act;
2. develop policy to ensure that data integrity is properly addressed as part of the data population process for future ED system development efforts; and
3. issue additional guidance for inclusion in IT system development contracts to address the transfer of critical system documentation and source code to a subsequent contractor.

We also recommend that the Chief Operating Officer for OSFAP obtain an independent assessment (or conduct an in-house assessment) of the quality and completeness of PEPS data.

BACKGROUND

As authorized by Title IV of the Higher Education Act (HEA) of 1965, as amended, the U.S. Department of Education (ED) administers several student financial assistance programs designed to help American students finance the cost of a postsecondary education. Within ED, the Office of Student Financial Assistance Programs (OSFAP) is responsible for the delivery of the Federal Student Financial Assistance (SFA) programs, including the monitoring of all other organizations that assist in the provision of SFA to eligible recipients. These organizations include postsecondary institutions and other institutions, guaranty agencies, lenders, servicers, accrediting agencies and state licensing bodies. In order to strengthen the Department's ability to properly administer the programs, HEA, as amended, requires the Department to establish and maintain a central data base on institutional accreditation, eligibility and certification.

Organizational Responsibilities

Within ED, responsibility for development of an Information Technology (IT) system rests with multiple offices. Among its other responsibilities, the Office of the Chief Information Officer (OCIO) establishes IT policy and provides IT technical assistance and contracting services to other ED offices as needed. The ED user offices are responsible for system conceptualization, requirement definitions and system acceptance.

Information Resource Management and Operations (IRMO) within OCIO is responsible for ensuring ED's IT is acquired and information resources are managed in a manner consistent with the Clinger-Cohen Act of 1996. IRMO plans, develops, directs and maintains ED's information architecture and data administration processes. IRMO develops and implements ED policy and procedures pertaining to all aspects of the planning, design implementation, and utilization of automated information systems.

Contracts and Purchasing Operations (CPO) within the Office of the Chief Financial Officer (OCFO) is responsible for all contract administration activities, including development and award of the PEPS development contract, monitoring of contract deliverables and payment of contractor billings. As of August 26, 1998, the Department has reported obligations of \$7,347,896 and expenditures of \$6,025,257 for contractor development of PEPS.

OSFAP has two offices predominately involved in PEPS development. The Institutional Participation and Oversight Service (IPOS) is responsible for administering the gatekeeping activities to ensure only eligible institutions participate in the Department's SFA programs. IPOS is responsible for providing user input for PEPS development. Program System Service

(PSS) is responsible for oversight of PEPS development by the contractor. PSS staff also perform the operation functions for the system.

Development History

In 1978, ED developed the Institutional Data System (IDS) to maintain institutional data. Over the years, the system was modified and expanded in attempts to meet the informational needs of the Department's management. However, the system was plagued with inaccurate data, unfriendly user interfaces, inflexible reporting capabilities and insufficient security and access controls.

In May 1992, ED decided to replace IDS with the Postsecondary Education Participants System (PEPS). PEPS was designed to have significantly improved functional and data maintenance capabilities to more fully meet the needs of system users. PEPS was also designed with numerous interfaces to exchange data with other Departmental SFA program data bases.

PEPS is being developed primarily in seven functional module segments described as follows:

Eligibility and Certification: This module maintains institutional data used primarily by IPOS case teams to manage and monitor institutions applying for and participating in the Federal student financial aid programs. The Eligibility and Certification (E&C) module was the first module implemented in March 1995. The Department reengineered it and implemented a web-based electronic version for institutions reapplying for participation in the SFA programs in December 1997. This capability will be expanded to institutions that are first time applicants for the 1998-99 fiscal year.

School Program Review: This module maintains institutional data developed by IPOS case teams during program reviews of institutions participating in the Department's student financial aid programs to assess compliance with program requirements. The School Program Review module was implemented in May 1995.

School Audit Review and Resolution: This module maintains institutional data on required audit reports submitted by institutions as a condition for continued participation in the student financial aid programs and the resolution of these audits by IPOS case teams. The School Audit Review and Resolution module was implemented in February 1997.

School Default Management: This module maintains institutional data on all activities related to school default rates, primarily for the Federal Family Education Loan Program and the Federal Direct Loan Program. The School Default Management module was implemented in February 1998.

Closed Schools: This module maintains institutional data on actions taken by the Department for institutions that have ceased operations and no longer participate in the Department's student financial aid programs. The Closed School module was implemented in July 1998.

Guarantor and Lender Oversight Service: This module maintains institutional data developed by the Guarantor and Lender Oversight Service (GLOS), within OSFAP, during program reviews of guaranty agencies and lenders. The GLOS module was implemented in July 1998.

Funding Management: This module will maintain institutional data on the level of funding obtained by schools participating in the student financial aid programs. Due to funding constraints, the Funding Management module is not scheduled for implementation until later in fiscal year 1999 at the earliest, depending upon the availability of funds.

Due to the large functional requirements for PEPS, the Department decided to implement PEPS in phases. Phase One encompassed the initial gatekeeping functions of the E&C and School Program Review modules upon which the other PEPS modules are being built. ED is currently completing the additional functional requirements of PEPS development Phase Two. Phase Two includes enhancements to the School Audit Review and Resolution module, the Closed School module, the School Default Management module, the GLOS module and the Funding Management module. As PEPS applications were implemented, duplicative functions maintained by IDS were removed from operation. IDS was completely shut down on July 24, 1998.

AUDIT RESULTS

In managing the development of PEPS, ED has demonstrated many attributes common to successful IT project management. In many respects, the project development team has done an admirable job of keeping the project moving forward and adapting to changes outside of its control. Throughout the system development process, the PEPS development team (PSS and contractor staff) demonstrated stable leadership and a strong commitment to the project goals. The team leader was especially effective in shepherding the process forward and adapting the development plans for changes necessitated by factors outside the team's control. Current system development "best practices" have been exhibited, including the following:

- ❑ *Modular Contracting-* PEPS was one of the first ED contracts to employ a modular approach to systems development. This approach calls for the acquisition of major information systems through a series of phased-in modules, and has been endorsed by former Office of Management and Budget (OMB) Director Franklin Raines.
- ❑ *Extensive User Input-* From a review of PEPS team documents, we learned that joint application development (JAD) sessions were held early on, where the PEPS regional, state and headquarters user groups were represented. As system requirement, design and database design documents were created, they were distributed in draft to the appropriate user groups for review and comment before finalization. User groups were also invited to multiple software prototyping sessions, to provide them an opportunity to comment on proposed screen and report designs. This ongoing interaction helped the development team properly adapt to changing user needs.
- ❑ *Data Input at Point of Data Origination-* In December 1997, PEPS introduced the Electronic Application for Title IV (E-APP) on the world wide web. The E-APP is expected to increase the accuracy of OSFAP's data, as it allows institutions to input or update the data necessary for recertification of their eligibility to participate in the SFA programs. The PEPS Director has indicated that participating institutions have expressed great satisfaction with this enhancement. One user we contacted, who is responsible for the input of PEPS data for thirty main campuses, indicated that the new system is a great time saver and very user friendly. The GLOS module implemented in July 1998 further reduced the need for ED input of user generated paper reports. This module allows Guaranty Agencies to directly input the results of the program reviews they conduct of participating institutions.

- ❑ *Use of Year 2000 Compliant Software-* PEPS was built primarily with software and hardware that has been certified to be Year 2000 compliant (*i.e.*, can properly process dates that are January 1, 2000 and beyond). Recently, it completed Year 2000 testing and validation of all implemented modules ahead of schedule and under budget. OSFAP management has indicated that additional functions will be built to be Year 2000 compliant and will have Year 2000 testing integrated into the systems acceptance testing phase of development.

However, despite the many positive attributes noted, development of the PEPS system has taken over six years and one module is still not complete and enhancement of others is pending. The modules that have been put into production have been underutilized, due to concerns with the quality and completeness of the PEPS data. System users have generally expressed the opinion that PEPS is well designed to meet their needs and that once the system is fully implemented it will serve the Department well.

The results of our audit work indicate that there are several areas where ED's processes could be improved, to help facilitate system development and implementation. In the sections below, three areas for improvement are presented: 1) the need to accelerate implementation of the capital planning provisions of the Clinger-Cohen Act; 2) the benefit of obtaining assurance on the quality and completeness of PEPS data; and 3) the need to strengthen controls over system transition in ED IT contracting.

Finding No. 1 ED Needs to Accelerate Its Implementation of the Capital Planning Provisions of the Clinger-Cohen Act

PEPS development has experienced several delays since its inception in May 1992. In our opinion, many of the conditions that caused the delays were outside the control of the development team, but would have been manageable through a departmental capital planning and investment control process. The protracted PEPS development process resulted in additional expense through the need for work around routines and extension of IDS operations into July 1998. During most of this interim period, ED managers lacked easily retrievable information for SFA program management.

Numerous Delays Hinder System Development

The May 1992 decision to develop PEPS was driven by ED's need to replace the problem-plagued and costly IDS. From the start, PEPS system development encountered numerous delays:

- The E&C module was the first part of PEPS put into operation in March 1995. Its arrival was delayed approximately six months due to a lack of funding, after the development of the business requirements in March 1993. In Fall 1993, the new Deputy Assistant Secretary initiated changes to simplify PEPS which resulted in further revision to the E&C requirements.
- PEPS experienced another delay of approximately six months in 1995 due to a statutory change which necessitated revision of the institutional application data requirements.
- A change in contractors brought about another six month postponement of new development activities from Fall 1995 through Spring 1996. This delay was caused by inadequate provisions in the initial PEPS contract which resulted in substantial reconstruction of ongoing development work (see “Controls Over ED IT Contracting Need to be Strengthened to Address System Transition” below).
- Under the direction of a new Deputy Assistant Secretary, PEPS was again revamped in 1996 to accommodate a new OSFAP structure.
- Subsequent efforts in 1997 to realign the E&C module with IPOS’ work processes and to create a web-based eligibility recertification process resulted in the current E&C module. The series of events impacting on the E&C module also resulted in development delays for the other modules, since they were designed to build upon E&C.

Under Funding of Project Significantly Contributes to Delays

Even after considering the varied events noted above, the most significant factor that contributed to delays in PEPS production appeared to be under funding of the project. The Project Director indicated that prior to 1997, only \$1.5 million per year was allocated for PEPS maintenance and development. In the Director’s opinion, \$3 million per year would have been needed to complete PEPS within three years. As recent as June 1998, the PEPS team was expecting FY 1999 to be the year in which PEPS development would be completed.

However, in a June 1998 response to an inquiry about the impact of not continuing the project, the PEPS development team told ED’s OCIO:

“If development were stopped at this time, several key functions would be missing- Funding Management, Direct Loan School Selection, Accrediting Agency and Single Identifier. The loss of these functions would hamper the Department’s efforts to obtain complete and reliable information about the organizations ED monitors.”

A follow-on question from the OCIO asked what the impact would be of significantly reducing or canceling the funding for one year, to which the following response was provided:

“If the budget for FY 1999 is reduced, then the development of the last modules will have to be deferred until FY 2000. PEPS has suffered budget cuts too many times in the past years, which has resulted in the development taking twice as long as it should have. FY 1998 was originally slated to be the final year, but due to budget cuts, the development of several modules had to be deferred to FY 1999. This caused a tremendous strain on our users.”

In August 1998, the PEPS Director indicated to us that the team’s fiscal year (FY) 1999 funding request was for \$5.4 million. The actual amount approved for PEPS was \$2.5 million. The Director indicated that the resultant funding deficiency will only allow them to maintain the status quo. Therefore, it will result in another delay to the completion of PEPS.

PEPS Could Have Benefitted From a Capital Planning and Investment Control Process

In our opinion, the PEPS development process could have benefitted greatly by the presence of a capital planning and investment control process as called for in Section 5122 of the Clinger-Cohen Act (CCA)[See Appendix B]. In fairness to ED, the CCA was not effective until August 1996 - long after many of the PEPS delays were experienced. However, the circumstances encountered by PEPS point to the benefits to be derived by the implementation of such a process, as follows:

- *Linkage of Strategic Planning, Budget and IT Investment Decisions*
A CCA capital planning and investment control process would provide a sound basis for linking strategic planning, budget and IT investment decisions. As continued funding for PEPS was considered, its importance in achieving ED’s strategic goals and objectives, such as Objective 3.3 (*Postsecondary student aid delivery and program management is efficient, financially sound and customer responsive*) of the current strategic plan would be carefully weighed. Moreover, the cost benefit analysis developed as part of the process would provide the decision makers with information necessary to make an informed financial decision. They would be able to more accurately determine the consequence of not fully funding a specific IT investment that is being considered. In the case of PEPS, the cost of required work around routines and IDS maintenance (up to \$1 million annually) would be factored into the decision process.

This linkage of planning, budgeting and decision-making would also provide for an annual review of the performance of investments approved during the prior budget cycle. Therefore, management would be able to direct funding to where it would have the biggest impact, and take corrective action where underachievement of prior IT investments warranted such action.

- *Alignment of Proposed IT Investments With Business Processes*
A CCA capital planning and investment control process would also provide a means to ensure that proposed IT investments are aligned with business processes, and that the business processes are reviewed and, if necessary, reengineered prior to the application of an IT solution. With PEPS this would have allowed ED to avoid inefficient requirement changes to the E&C module, and would have created an open forum where the impact of other proposed changes to the structure of the project would be discussed prior to being pursued.
- *Documentation of Project Decisions and Current Year Goals*
Inherent in a CCA capital planning and investment control process is a means to document the basis for project decisions and current year goals for each approved project. This information should prove to enhance project accountability, lead to shorter development cycles and facilitate the stability of the IT investment process in the event of turnover in key staff positions.

In March 1998, we previously reported that the OCIO had not “finalized and implemented a capital planning and investment control process which maximizes value and manages risks of information technology”[*The Status of Education’s Implementation of the Clinger-Cohen Act (Audit Control Number A11-70007)*]. In our recommendation to implement such a process, we pointed out that the solution should “clearly assign responsibilities related to acquisition, monitoring, and termination of all IT projects.”

Earlier in March 1998, as also stated in our Clinger-Cohen report, the OCIO indicated that it had selected PEPS to be a pilot for its draft capital planning process. In April, the PEPS Project Director received 30 questions (two of which are noted on the previous page) to respond to as part of the pilot process. Only one of the 30 questions addressed the project’s “cost/benefit analysis”. It did not include any guidance on how this analysis was to be performed, what could/should be included, or what period of time should be covered by the analysis. The PEPS team responded that “no written cost/benefit analysis exists.” As of September 1998, the PEPS Director had not received a response or further guidance from OCIO.

In a follow-up contact with the OCIO, we were informed that the pilot project was put on hold due to leadership changes and other priorities. In the interim, a more simplified process requiring less input from the ED project managers is being examined. Our review of a completed copy of the proposed “simplified form” for another mission critical ED IT system noted that it too stated “a full cost/benefits analysis was not completed”.

In our opinion, a uniform process for generating such an analysis and developing accurate input from the Department’s Information Technology Investment Review Board (ITIRB) for each and every proposed IT investment is critical to the proper implementation of a capital planning and

investment control process that is consistent with both the CCA and “Raines Rules” (implementing instructions from OMB). The proper implementation of a capital planning and investment control process will ultimately benefit all of ED’s IT projects.

Finding No. 2 ED Should Take Steps to Assure the Quality and Completeness of PEPS Data

Early utilization of the PEPS system was hampered by incomplete and, in some instances, problematic data. ED management has primarily attributed the PEPS data quality concerns to the transfer of unreliable data from the IDS, PEPS’ predecessor system, and to poor data entry practices during the systems’ early years. Recognizing this limitation, ED has initiated several efforts to improve the quality of the PEPS data during the past several years. However, as of August 1998, a thorough independent data reliability assessment has not been performed.

The Government Performance and Results Act of 1993 (GPRA) underscored the need for complete and accurate data. The purpose of GPRA was (in part) to provide information about program results and service quality to Federal managers to help them improve service delivery, and to congressional leaders to assist them in their decision making responsibilities. Accurate and complete PEPS data is clearly instrumental to the achievement of ED’s strategic plan GPRA objectives and its desired customer satisfaction.

Previous OIG Concerns Over Data Accuracy

Concerns with the accuracy and completeness of the data in IDS surfaced prior to the start of PEPS development. In a November 1989 Management Improvement Report (#90-1), ED’s OIG identified concerns with the accuracy of data in the predecessor IDS certification file, as well as the completeness of the data in the eligibility, program review and audit review files. Each of the three files appeared to have thousands of errors or omissions. Similar data concerns were reported by the OIG on several other occasions.

In a memorandum to IPOS management dated July 31, 1997, we noted the inconsistent treatment and reporting of data entered into the PEPS School Program Review module data base. The memorandum identified numerous instances (39 of 100 records reviewed) where PEPS reported that IPOS personnel had performed an institutional program review even though a site visit was not made. Further, for the 61 institutions visited, IPOS did not always indicate whether the reviews were full or limited in scope.

Concerns were also communicated in August 1997 about the completeness of the Department’s data on school audits and audit resolution activity (SFA Action Memorandum No. 97-06). The memorandum identified that IPOS had not taken any action against 1,479 participating

institutions identified as not having submitted an audit report due to concern with the accuracy of the audit tracking data. The memorandum also noted issues related to audits received and not entered into the database and a lack of follow-up efforts to obtain the missing audits.

OSFAP Initiatives to Improve Data Quality

OSFAP management recognized the importance of obtaining a high degree of reliability for PEPS data. With this goal in mind, they used data conversion software to edit and transfer data to the PEPS' E&C database during the migration of data from IDS to PEPS. However, an independent verification was never performed to test the accuracy of the data. Within the past few years, as data quality concerns continued to surface, OSFAP management embarked on a more concerted effort to correct erroneous data records and populate missing data in the E&C, School Program Review and School Audit Review and Resolution modules.

To improve data in the E&C module, Program Systems Service (PSS) led a two phase effort to compare the data in PEPS to the data reported on original school applications submitted to the Department. PSS first attempted to correct and verify the critical data elements for all domestic institutions, then repeated the procedure for secondary data elements. This process was completed in May 1998.

Project management reports that the new web-based E-APP recertification process, although just recently started, has also helped to improve the quality of the data in the E&C module. As institutions submit their recertification applications they are submitting the corrections to a pending file in PEPS where the data is later reviewed, verified and, if accurate, accepted by the Department.

The PEPS team has gained further opportunity to improve the quality of PEPS data through the National Student Loan Data System (NSLDS) front-end edit checks. When PEPS school data is used to update (transferred to) the NSLDS, an error report is produced for any data that cannot be received (data record fails the conversion software edit checks). These reports are then used to identify and correct data errors in PEPS.

In addition, management has attributed a share of the PEPS data reliability problems to poor data entry procedures, as indicated above. To address these problems, IPOS has provided data entry personnel with additional guidance and training. They have also attempted to clarify the definitions of the data elements tracked in PEPS where users have indicated confusion or internal data analyses have identified inconsistent interpretations.

Based on the combination of the data clean-up efforts and the greater accuracy of the electronic recertification application, OSFAP management believes the data in the E&C, School Program Review, and School Audit Review and Resolution modules are sufficiently accurate for use by the user community. Although project management indicates that PEPS data quality has been

significantly improved, an independent assessment of the reliability of key data elements in each PEPS module has not been performed. IPOS management drafted guidance in September 1997 for assessing the reliability of system data, however, to date an internal assessment process has not been implemented and the accuracy and completeness of the PEPS databases has not been independently assessed.

For the Department to obtain the full benefit from the PEPS system, it should take steps to assure the system's user community of the quality and reliability of the PEPS data. It is also evident that ED should take steps to ensure that data integrity is addressed as part of the data population process for future system development efforts.

Finding No. 3 Controls Over IT Contracting Need to be Strengthened to Address System Transition

Project management reported that the PEPS development contract with the original contractor did not include a provision for the transfer of critical system documentation and source code to the subsequent contractor. This oversight resulted in a significant delay in PEPS development during 1995/1996. At additional time and expense, PSS was eventually able to provide the subsequent contractor with the necessary documentation to resume project development.

OMB Circular A-123, as revised, requires agencies to develop and implement cost-effective management controls. Management controls are defined as organization, policies, and procedures used by agencies to reasonably ensure that programs and resources are protected from waste, fraud and mismanagement.

As part of our audit procedures, we reviewed the current contract for the development of PEPS and verified that it included provisions for the transfer of system documentation and source code to any subsequent contractor. However, discussions with other Department officials revealed that policies and procedures do not exist to ensure the appropriate provisions are included in all contracts for IT system development. Therefore, controls over the awarding of IT system contracts need to be strengthened to address system transition, which in turn will help protect the interest of the Federal government.

RECOMMENDATIONS

We recommend that the Chief Financial Officer and the Acting Chief Information Officer:

1. accelerate the implementation of the capital planning and investment control provisions of the Clinger-Cohen Act, including review and amendment of ED's current implementation plans to provide for the submission and comparative review of cost benefit analyses as part of the evaluation of all significant IT investment alternatives;
2. develop policy to ensure that data integrity is properly addressed as part of the data population process for future ED system development efforts; and
3. issue additional guidance for inclusion in IT system development contracts to address the transfer of critical system documentation and source code to a subsequent contractor. This guidance should also address the ownership rights of the system upon acceptance by the Department and include recommended language for such provisions.

We also recommend that the Chief Operating Officer for OSFAP, at his option, obtain an independent assessment or conduct a comprehensive in-house assessment of the quality and completeness of PEPS data. We also recommend that a plan be developed to have all identified errors or omissions corrected within six months of the issuance of the assessment report.

OBJECTIVE, SCOPE & METHODOLOGY

The objective of our audit was to assess the Department's management of the Postsecondary Education Participants System development. Accordingly, our work focused on how the Department was developing PEPS to meet the needs of system users. We did not perform an independent assessment of the accuracy and completeness of the data in PEPS data bases. We also did not assess the efficiency or effectiveness of technical solutions implemented by the PEPS developer.

To accomplish our objective, we interviewed Department officials responsible for managing PEPS development, performing PEPS data entry functions and defining system requirements of PEPS applications. We also reviewed system documentation and project cost information. We judgementally reviewed selected system documentation files detailing the system development work completed during the period March 1993 through April 1997. In addressing the data population steps in the PEPS development process, we built our work upon prior audit work performed by OIG staff. We then made inquiries of the appropriate Department officials and reviewed the Department's plans to ensure the accuracy of PEPS data.

We conducted our fieldwork at OSFAP, OCFO and OCIO offices in Washington, DC from April 15, 1997 through January 6, 1998. Additional work was performed in August and September 1998 and in February 1999. Our audit was conducted in accordance with generally accepted government auditing standards applicable to the scope of our review.

STATEMENT ON MANAGEMENT CONTROLS

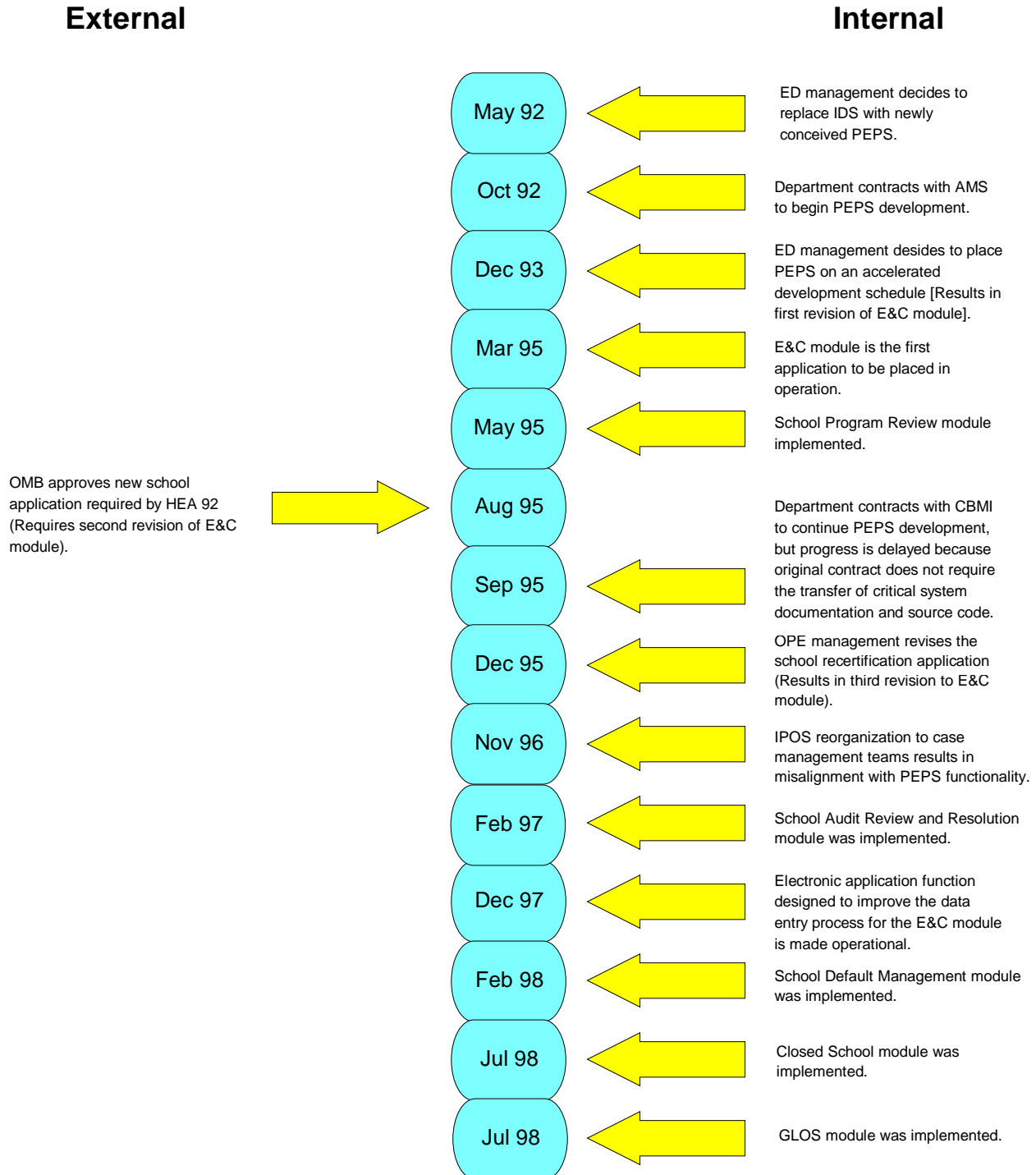
As part of our review, we assessed the system of management controls, policies, procedures and practices applicable to the Department's management of the PEPS development process. Our assessment was performed to determine the level of control risk for determining the nature, timing and extent of our substantive tests to accomplish the audit objectives. For purposes of this report, we limited our review to the assessment of the significant controls over project development.

Because of inherent limitations, a study and evaluation made for the limited purposes described above would not necessarily disclose all significant weaknesses in the management controls. However, based upon current criteria, we would consider the absence of a capital planning and investment control process to be a significant weakness in the Department's management controls over the IT system development process. It is important to note though, that such a process was not

required until the effective date of the Clinger-Cohen Act in August 1996. We did not become aware of any other significant weaknesses during the course of our audit. This weakness and its effect are fully discussed in the AUDIT RESULTS section of this report.

PEPS Project Development

Timeline of Significant Events



Clinger-Cohen Act of 1996

Subtitle C-Executive Agencies

SEC. 5121. RESPONSIBILITIES

In fulfilling the responsibilities assigned under chapter 35 of title 44, United States Code, the head of each executive agency shall comply with this subtitle with respect to the specific matters covered by this subtitle.

SEC. 5122. CAPITAL PLANNING AND INVESTMENT CONTROL.

(a) DESIGN OF PROCESS.-In fulfilling the responsibilities assigned under section 3506(h) of title 44, United States Code, the head of each executive agency shall design and implement in the executive agency a process for maximizing the value and assessing and managing the risks of the information technology acquisitions of the executive agency.

(b) CONTENT OF PROCESS.-The process of an executive agency shall-

- (1) provide for the selection of information technology investments to be made by the executive agency, the management of such investments, and the evaluation of the results of such investments;
- (2) be integrated with the processes for making budget, financial, and program management decisions within the executive agency;
- (3) include minimum criteria to be applied in considering whether to undertake a particular investment in information systems, including criteria related to the quantitatively expressed projected net, risk-adjusted return on investment and specific quantitative and qualitative criteria for comparing and prioritizing alternative information systems investment projects;
- (4) provide for identifying information systems investments that would result in shared benefits or costs for other Federal agencies or State or local governments;
- (5) provide for identifying for a proposed investment quantifiable measurements for determining the net benefits and risks of the investment; and
- (6) provide the means for senior management personnel of the executive agency to obtain timely information regarding the progress of an investment in an information system, including a system of milestones for measuring progress, on an independently verifiable basis, in terms of cost, capability of the system to meet specified requirements, timeliness, and quality.

SEC. 5123. PERFORMANCE AND RESULTS-BASED MANAGEMENT.

In fulfilling the responsibilities under section 3506(h) of title 44, United States Code, the head of an executive agency shall-

- (1) establish goals for improving the efficiency and effectiveness of agency operations and, as appropriate, the delivery of services to the public through the effective use of information technology;
- (2) prepare an annual report, to be included in the executive agency's budget submission to Congress, on the progress in achieving the goals;
- (3) ensure that performance measurements are prescribed for information technology used by or to be acquired for, the executive agency and that the performance measurements measure how well the information technology supports programs of the executive agency;
- (4) where comparable processes and organizations in the public or private sectors exist, quantitatively benchmark agency process performance against such processes in terms of cost, speed, productivity, and quality of outputs and outcomes;
- (5) analyze the missions of the executive agency and, based on the analysis, revise the executive agency's mission-related processes and administrative processes as appropriate before making significant investments in information technology that is to be used in support of the performance of those missions; and
- (6) ensure that the information security policies, procedures, and practices of the executive agency are adequate.

TITLE LII-PROCESS FOR ACQUISITIONS OF INFORMATION TECHNOLOGY

SEC.5202 INCREMENTAL ACQUISITION OF INFORMATION TECHNOLOGY.

(a) POLICY.-The Office of Federal Procurement Policy Act (41 U.S.C. et seq.) is amended by adding at the end the following new section:

“SEC.35. MODULAR CONTRACTING FOR INFORMATION TECHNOLOGY.

“(a) IN GENERAL.-The head of an executive agency should, to the maximum extent practicable, use modular contracting for an acquisition of a major system of information technology.

“(b) MODULAR CONTRACTING DESCRIBED.-Under modular contracting, an executive agency’s need for a system is satisfied in successive acquisitions of interoperable increments. Each increment complies with common or commercially accepted standards applicable to information technology so that the increments are compatible with other increments of information technology comprising the system.

“(c) IMPLEMENTATION.-The Federal Acquisition Regulation shall provide that-

“(1) under the modular contracting process, an acquisition of a major system of information technology may be divided into several smaller acquisition increments that-

“(A) are easier to manage individually than would be one comprehensive acquisition;

“(B) address complex information technology objectives incrementally in order to enhance the likelihood of achieving workable solutions for attainment of those objectives;

“(C) provide for delivery, implementation, and testing of workable systems or solutions in discrete increments each of which comprises a system or solution that is not dependent on any subsequent increment in order to perform its principal functions; and

“(D) provide an opportunity for subsequent increments of the acquisition to take advantage of any evolution in technology or needs that occur during conduct of the earlier increments;

“(2) a contract for an increment of an information technology acquisition should, to the maximum extent practicable, be awarded within 180 days after the date on which the solicitation is issued and, if the contract for that increment cannot be awarded within such period, the increment should be considered for cancellation; and

“(3) the information technology provided for in a contract for acquisition of information technology should be delivered within 18 months after the date on which the solicitation resulting in award of the contract was issued.”.



UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE CHIEF FINANCIAL OFFICER

THE CHIEF FINANCIAL OFFICER

Mr. James Cornell, Area Manager
Washington, D.C. Field Office
Office of the Inspector General
U.S. Department of Education

Dear Mr. Cornell:

Thank you for the opportunity to review and comment on the recommendations included in the draft report titled *Audit of the Postsecondary Education Participants System Development* (ACN 11-70002). This response outlines the activities underway and those planned that address the issues pertaining to the Office of the Chief Financial Officer and the Office of the Chief Information Officer raised in this report.

Recommendation #1. We recommend that the Chief Financial and Chief Information Officer (CF&CIO) accelerate the implementation of the capital planning and investment control provisions of the Clinger Cohen Act.

We agree with this recommendation and have already accelerated the implementation of the capital planning and investment control provisions of the Clinger-Cohen Act. We refer you to the recently submitted Corrective Action Plan for Audit # ACN: 11-70007 in which we review details of our Clinger-Cohen Act implementation plans and accomplishments to date. We have attached a copy of our corrective action plan for that audit and will also use it as the action plan for this recommendation. The ED IT Investment Management Program will be in operation for the FY2001 budget cycle in the selection phase as referred to in the OMB and GAO guidance. The IT Investment Review Board will make decisions regarding funding of major projects. The Department acquired, and will shortly be installing, the government *de facto* standard IT capital planning and investment management system, ITIPS, developed by the Department of Energy under the auspices of the CIO Council Capital Planning Committee. The ITIPS system will be used by the OCIO staff to monitor and manage IT project information and it will be available to project managers for use as a powerful project management tool.

Recommendation #2. We recommend that the Chief Financial and Chief Information Officer (CF&CIO) develop policy to ensure that data integrity is properly addressed as part of the data population process for future ED system development efforts.

We agree with this recommendation. The issue of data integrity will be a focus in the ED Enterprise Information Technology Architecture which is to be developed over the next two years. The architecture itself will become Department policy. The data view of the

architecture will be developed in a segmented manner, using a project approach. The first initiative is underway, called the K-12 Auditing, Monitoring and Technical Assistance Project Feasibility Study. It is expected to lead to an automated scheduling system and an electronic means of accessing data and information needed by any office in the Department undertaking a K-12 site visit for auditing, monitoring, or technical assistance. The process of developing these two system components will include data normalization, validation and verification activities.

Recommendation #3. We recommend that the Chief Financial and Chief Information Officer (CF&CIO) issue additional guidance for inclusion in IT system development contracts to address the transfer of critical system documentation and source code to a subsequent contractor.

We agree with this recommendation and have already implemented it. We, therefore, will not be providing a corrective action plan for this recommendation. The Contracts and Purchasing Operations acquisition planning guide has recently been updated to include transitioning to the next contract. However, the Government Rights in Data clauses normally contained in systems development contracts makes any data produced under a contract available for use by the government. It also makes clear the ownership rights of the data. The government would only have to request the transfer of the data in the desired format and potentially pay for preparation and shipping costs.

Thank you for the opportunity to respond to this audit.

Sincerely,



Donald Rappaport

cc: Greg Woods
Attachment: Corrective Action Plan


MEMORANDUM

UNITED STATES DEPARTMENT OF EDUCATION

WASHINGTON, D.C. 20202-_____

DEC 23 1998

TO: Jim Cornell
Area Manager
Office of Inspector General

FROM: Greg Woods 
Chief Operating Officer
Office of Student Financial Assistance Programs

SUBJECT: Draft Audit Report, "Audit of the Postsecondary Education Participants System Development," (ACN 11-70002)

Thank you for the opportunity to review and comment on the draft audit report entitled *Audit of the Postsecondary Education Participants System Development* (ACN 11-70002). This memorandum addresses the recommendation in the report that was directed to the Office of Postsecondary Education; the responsibility for addressing the recommendation and related issues now falls within the purview of the Office of Student Financial Assistance. The Office of Chief Financial Officer and Chief Information Officer will provide a response that addresses the issues related to it under separate cover.

We do not concur with the recommendation to obtain an independent assessment of the quality and completeness of Postsecondary Education Participants System (PEPS) data, for the reasons stated below.

The Office of Student Financial Assistance Programs is committed to maintaining accurate and complete data in its systems. We have ongoing data quality control efforts across the board. However, we have to prioritize our projects when it comes to having independent assessments of data quality. Our first priority is an independent assessment of the National Student Loan Data System, as we plan to use the data in that system to support our Federal Family Education Loan (FFEL) liability estimates and our payments to guaranty agencies. Should we determine that doing an independent assessment of PEPS data would be cost beneficial in the future, we may consider contracting for such a study. However, considering the information in the draft audit report and the breadth and depth of ongoing activities, we believe such a move is not warranted at this time.

With respect to the audit report, there was no specific information on current data quality issues. The Office of the Inspector General (OIG) noted its previous concerns, but the most recent report or document cited (SFA Action Memorandum No. 97-06, which addressed concerns about completeness of data on school audits and audit resolution

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activity) is well over a year old. The new work processes initiated within the Institutional Participation and Oversight Service (IPOS) and more extensive use of PEPS data, combined with the completion of several additional PEPS modules and data integrity activities, make these reports and assessments outdated. Further, although the finding states that "to obtain the full benefit from the PEPS system ...[the Department] should take steps to assure the system's user community of the quality and reliability of the PEPS data," there is no information in the report to substantiate current user community concerns.

OSFAP has instituted several processes that result in improved data quality and other activities that are, in fact, assessments of data quality.

With the institutional recertification effort, the reorganization of IPOS and the change in the entire way IPOS does business, PEPS data have been improved significantly, and are undergoing constant improvement and correction. Some of the activities that result in improved data quality are listed below:

- During recertification, the first cycle of which was completed recently, IPOS staff reviewed every active school and updated the data in PEPS.
- With the development and implementation of a web-based "Application for Approval to Participate," institutions review their own data and make corrections as necessary. The elimination of manual data entry further ensures the completeness and accuracy of data. The E-App web site has built-in edits to prevent incorrect, inconsistent, and incomplete data. The web site provides interactive data checking for dates, numerics, fixed length fields, and required entries. If the system detects an invalid entry, the school user is alerted and prompted to correct the data. The system performs additional edit checks on each page and if any invalid data entries are detected, the page will redisplay with the message(s) at the top indicating the question in which data needs to be corrected and the correction that needs to be made. Any application containing invalid entries cannot be sent by the institution to the review area. Also, as institutions can update their data quickly and easily at any time, they are doing this in a timely manner.
- The focal point in IPOS to identify data quality issues is an IPOS-PEPS workgroup, which was established in October 1997 and meets weekly. The workgroup addresses all data quality concerns, identifies PEPS "bugs", and determines specific PEPS enhancements needed to correct and prevent systematic errors in the data.
- Audit and recertification reports are produced weekly using PEPS data. Because the Case Teams use these reports to track their work, they identify and correct any inaccuracies immediately.

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- Case Teams and other IPOS Divisions use a monthly report, with PEPS data on all major work streams, to reconcile their individual work plans. In reconciling, they identify and correct PEPS errors in eligibility and certification status, financial position, surety status, and processing status of compliance audits and financial statements.
- The Case Teams identify discrepancies and reconcile data when they find problems.
- To deal with data questions raised by non-IPOS users, IPOS has identified a contact person and established a tracking mechanism to ensure that potential PEPS problems are researched quickly and data corrections made or other actions taken, as appropriate.

The Case Teams perform an annual reconciliation using reports on:

- Schools recertified for which no financial statement is shown;
- Schools shown to be on surety for which surety detail is missing;
- Schools with surety detail shown for which financial statement information is missing;
- Schools shown on reimbursement but not on “stop pay”;
- Schools terminated from eligibility or closed during the fiscal year;
- Schools for which program reviews were started or completed in the fiscal year;
- Schools for which financial statements were reviewed in the fiscal year.

With the implementation of the additional modules in PEPS, actions that were once handled manually, and required dissemination of paper to several different offices, are now handled by the system, so errors of omission, lack of coordination issues and status update problems have been reduced significantly. Also, we anticipate adding more edits to eliminate the entry of mutually exclusive status codes and other types of inconsistent information.

In summary, because all areas of IPOS staff now use PEPS in their daily work, and use PEPS reports to manage their work load and monitor progress, inaccuracies and incomplete fields are identified much more readily than they were previously. There is a built-in incentive for ensuring data are corrected quickly, as the better data are, the easier it is to get the work done, to identify problems, and to track progress.

The PEPS Division conducts a number of data quality activities:

- The PEPS Division conducts data integrity checks on a weekly basis by printing management reports and reviewing them for missing or incorrect data.

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- PEPS also provides weekly feeds electronically to other Program Systems Service (PSS) systems. PEPS then assists the offices that work with the other systems to verify and correct program identifiers.
- PEPS staff conducts tolerance testing on PEPS software to assess improvement in performance. When the system slows down, users are more reluctant to enter data or to print reports that they need. Hence, checking system performance frequently is an integral part of improving data management and quality.
- PEPS imposes software edits and data element constraints in order to assure data entry integrity.
- PEPS staff randomly samples basic school profile data “on line” in order to correct or request that IPOS correct errors.
- Each summer, PEPS hires college students to review data, compare to source documentation, and correct data entries, as necessary.

Again, thank you for the opportunity to review and comment on this draft report.

cc: Don Rappaport
Jeanne Van Vlandren
Jerry Russomano
Linda Paulsen

OIG Comments on ED's Response

As noted in the Background section of our report, the responsibility for development of an IT system rests with multiple offices within the Department. As appropriate at the time of our draft report issuance, we directed our recommendations to the senior officer with primary responsibility for managing the Department functions affected by the findings. Since that time, two significant organizational changes have taken place: 1) OSFAP became the government's first Performance Based Organization (PBO) under the direction of a Chief Operating Officer (COO) reporting to the Deputy Secretary, and 2) The Office of the Chief Financial and Chief Information Officer was separated into two distinct offices with the selection of a Chief Information Officer (CIO) pending. Given the new structure, we anticipate that the three offices will need to collaborate to ensure a consistent approach is used to address the first three report recommendations. In response to the draft of this report, the Chief Financial Officer and the Acting Chief Information Officer expressed his general agreement [reprinted in Appendix C] with the first three findings and recommendations. Comments from the Chief Operating Officer for OSFAP [reprinted in Appendix D] expressed his disagreement with our recommendation for the completion of an independent assessment of the quality and completeness of PEPS data.

Comments on the OCFO and OCIO Response

We believe the planned actions detailed in the response, if properly implemented, will achieve the objectives sought by our recommendations.

Comments on the OSFAP Response

We agree with OSFAP's opinion that ensuring the accuracy and completeness of NSLDS data is a more pressing concern than independently assessing the quality of PEPS data. We are also confident that the steps taken to incorporate PEPS data review into OSFAP's business processes have served to improve PEPS data quality. However, we are still dismayed at OSFAP's reluctance to perform an overall, independent, data reliability assessment of PEPS.

The maintenance of quality IT system data and the controls and procedures needed to maintain quality data are the responsibility of management. Therefore, it is incumbent upon OSFAP to periodically test the quality and completeness of PEPS data to ensure that the high degree of reliance placed on this mission-critical system is not misplaced. Such assessments are especially important given the requirements for performance measurement (with reliable performance data) mandated by the Government Performance and Results Act.

As stated in our report, PEPS is a mission critical system designed to maintain data for the purpose of monitoring the delivery of SFA funds to eligible students. To date, the Department has spent over six million dollars for contractor development of PEPS. Since the production of useful data was the main reason system development was initiated, we believe an appropriate

amount of resources should be expended to provide assurance that a high degree of data accuracy and completeness has been achieved. We believe an independent reliability assessment of PEPS data could make this determination at a small percentage of the system development costs.

In responding to our draft report, OSFAP asserted that our report did not identify current problems with PEPS data quality. Conversely, we do not view the OSFAP response as providing adequate assurance that current PEPS data is accurate and complete. While considerable attention was devoted to explaining the steps being performed to address identified problems, the procedures mentioned do not include user surveys, positive confirmations or external data matches to establish that all data errors have been identified and the information in the system is complete. We were also unable to determine the effectiveness of some of the steps listed because documentation to support the data clean-up efforts was not always maintained.

In an effort to obtain an independent perspective, we contacted five PEPS users from the SFA community (outside the Department) to learn of their recent experiences in using PEPS data. Based on our very limited survey, respondents indicated their agreement that the quality and completeness of the PEPS data has been improved significantly. However, the respondents noted discrepancies remained in some data categories. For example, one of the five respondents noted errors remained in the PEPS “school program length” data field and another identified an error in the “closed schools” data field (*i.e.*, closed school was shown as active and eligible for participation in SFA programs).

Our intention in making the above observations is not to diminish the significant efforts that have been initiated by the Department. To the contrary, we find them commendable, especially efforts to provide for data entry at the point of origination for the institutional recertification process. Our concern is that the efforts fall short of providing assurance that the PEPS data being relied upon to manage the SFA programs is reliable for all intended purposes. We recognize, however, that other priorities and budget constraints could limit the Department’s ability to contract for an independent assessment at this time. Therefore, we are amending our recommendation to provide the COO for OSFAP with the option to immediately implement plans to conduct a comprehensive in-house assessment of the quality and completeness of PEPS data. We also recommend that a plan be developed to have all identified errors or omissions corrected within six months of the issuance of the assessment report.

Distribution List

Primary Action Official

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Greg Woods, Chief Operating Officer
Office of Student Financial Assistance Programs
U.S. Department of Education
ROB#3, Room 4004
7th and D Streets, SW
Washington, DC 20202-2500

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Collateral Action Official

Donald Rappaport, Chief Financial Officer
and Chief Information Officer
FOB#6, Room 4E313
400 Maryland Avenue, SW
Washington, DC 20202

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